

# (12) UK Patent Application (19) GB (11) 2 163 368 A

(43) Application published 26 Feb 1986

(21) Application No 8421113

(22) Date of filing 20 Aug 1984

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(51) INT CL<sup>4</sup>

B01D 27/04

(52) Domestic classification

B1T 1106 1408 1602 1905 DP  
F2B 1B

(56) Documents cited

GB	1549825	GB	1208567
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GB	1262055	EP	0009471

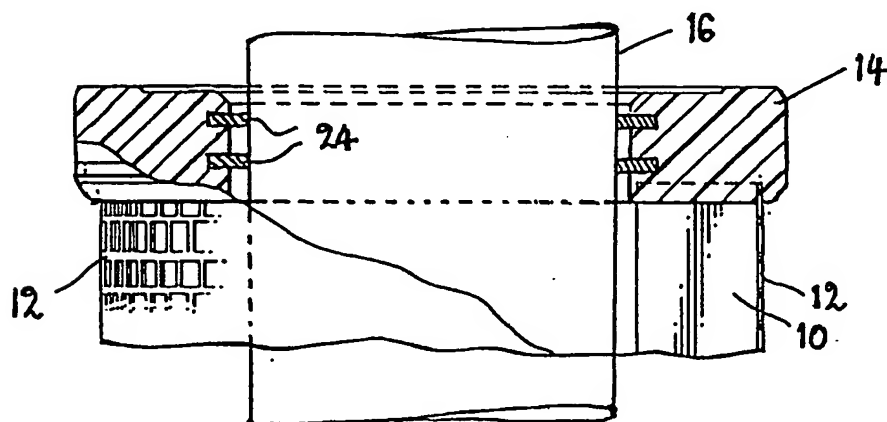
(58) Field of search

B1D  
B1T  
F2B

## (54) Filter Element

(57) An annular fluid filter element has an end cap 14 with one or two internal annular grooves, which accommodate one or two sealing rings 24, made of soft synthetic rubber and flat and rectangular in cross-section. The rings are easily flexed out of their radial disposition when the filter element is fitted on a spigot 16.

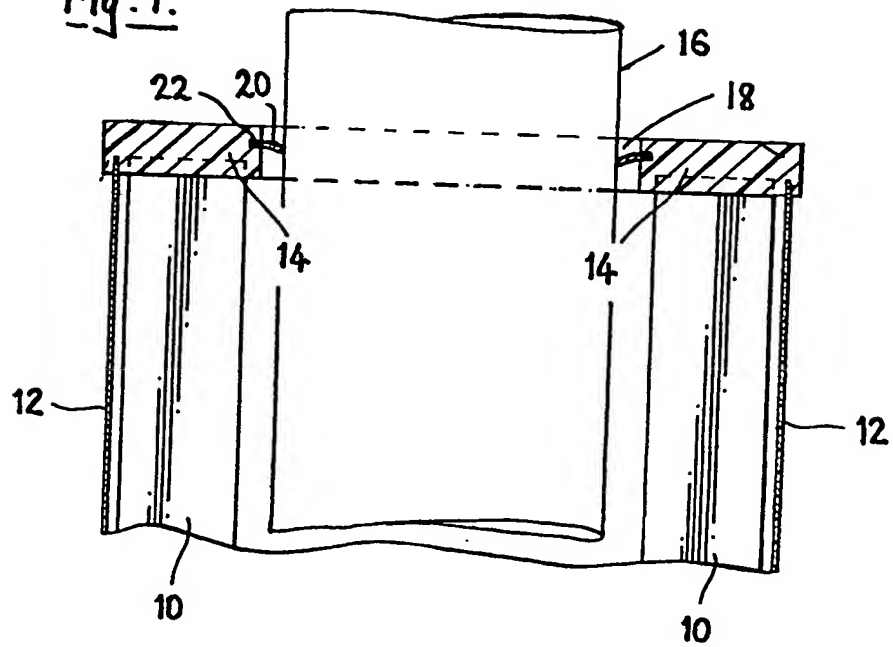
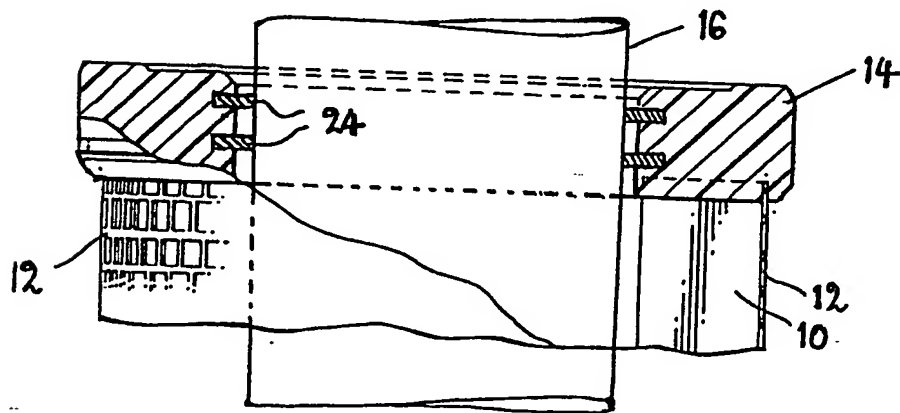
Fig. 2.



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The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

Fig. 1.Fig. 2.

## SPECIFICATION

## Fluid filter element

This invention relates to fluid filter elements and is especially concerned with filter elements comprising a part adapted to be fitted onto a cylindrical or tubular holder or spigot.

It is necessary to provide such filter elements with some kind of sealing means so that a fluid-tight seal is made between the element and the spigot or other holder on which the filter element is fitted. Hitherto these sealing means have usually taken the form of O-rings which are let into annular grooves on the filter element and which are bonded thereto so that they do not get displaced. Such seals, however, require the filter element to be pushed onto the spigot or other holder with considerable force, and a similar force is required to remove the filter element therefrom.

In those installations where power means of restricted power are used to fit one or more filter elements onto a spigot or other holder, it is sometimes found that the force required for such fitting or removal of the filter element is more than the power means can cope with. It is, therefore, an aim of the present invention to provide a form of seal which has excellent sealing properties but which permits the filter element to be fitted onto a spigot or other holder and be removed therefrom without exceeding the power limitations of the power means for such insertion and removal.

With this aim in view, the invention is directed to a fluid filter element having a part which is adapted to be fitted into a spigot or other holder and which is provided with at least one annular sealing member of soft flexible sealing material, for example, neoprene, having its outer peripheral portion rooted in the filter element and its peripheral portion projecting radially inwards therefrom, the cross-section of the sealing member being of substantially rectangular form with a width greater than its thickness so that the sealing member as a whole resembles a thin annular disc with the inner peripheral portion of the sealing member being easily flexed under pressure out of its radial disposition.

Two examples of fluid filter elements in accordance with the invention are shown in the accompanying drawings, in which—

Figure 1 is a vertical section through part of one form of filter element; and

Figure 2 is a vertical section through part of a second form of filter element.

The fluid filter element shown in Figure 1 comprises an annulus 10 of filtering material which here takes the form of pleated paper. The filtering material 10 is surrounded by a thin-mesh stainless steel cylindrical screen 12 which not only protects the filtering material but also serves as a spark arrester. The filtering material 10 and the surrounding screen 12 are both sealed at one end in a flange or ring 14 of polyurethane resin or a polyester or epoxy resin which is moulded on to the filtering material 10 and the screen 12.

The flange 14 of the filter element is adapted to be

fitted on a spigot 16 serving as a holder for the filter element. The inner diameter of the flange 14 is slightly greater than the outer diameter of the spigot 16 so that an annular gap 18 is formed between them. This gap is sealed by an annular seal 20 of neoprene the outer peripheral portion of which is received and held by bonding in an annular slot 22 in the flange 14 while the inner peripheral portion of the seal projects radially inwards from the flange. The annular seal 20 is of rectangular cross-section with a width greater than its thickness and has an inner peripheral portion which is sufficiently flexible that the amount of force necessary to fit the flange 14 onto the spigot 16 is very low when compared with filter means having O-ring seals. It will be appreciated that the inner diameter of the annular seal 20 will be slightly less than the outer diameter of the spigot 16 so that the seal is flexed when the filter element is fitted on the spigot.

Figure 2 shows an alternative form of filter element having an annular flange 14 which fits on to a tubular holder 16. In order to provide a good seal between the flange 14 and the holder 16 while allowing the filter element to be slid along the holder 16 without the expenditure of great force, two flexible annular seals 24 of the same construction as the seal 22 shown in Figure 1 are held in corresponding annular slots in the internal surface of the flange 14.

The present invention finds particular application in those installations where mechanical hands are used to insert fluid filter elements into a spigot or other holder and to remove the elements therefrom.

## CLAIMS

1. A fluid filter element having a casing, flange, ring or equivalent annular part which is adapted to be fitted on a spigot or other holder and which is provided on an internal surface with at least one annular sealing member of soft flexible sealing material having an outer peripheral portion rooted, as a close fit, in an annular slot in the casing or equivalent part and having an inner peripheral portion projecting radially inwards therefrom, the cross-section of the sealing member being of substantially rectangular form with a width greater than its thickness so that the sealing member as a whole comprises a thin annular disc with the inner peripheral portion of the sealing member being easily flexed under pressure out of its radial disposition when the casing or equivalent part is fitted on the spigot or other holder.

2. A fluid filter element according to claim 1 comprising an annulus of filtering material in the form of pleated paper which is surrounded by a cylindrical metal screen serving to protect the filtering material and to act as a spark arrester, the filtering material and the surrounding screen both being sealed at one end in a flange or ring of polyurethane resin, polyester, epoxy resin or other synthetic plastics material which is moulded on to the filtering material and the screen.

3. A fluid filter element according to claim 1 or claim 2 having two spaced-apart annular sealing

members on the internal surface of the casing or equivalent part.

4. A fluid filter element substantially as described herein with reference to the accompanying drawing.

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Printed for Her Majesty's Stationery Office by Courier Press, Leamington Spa. 2/1986. Demand No. 8817443.  
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.